

CULVERT OUTLET PROTECTION

GRAPHIC NOT YET AVAILABLE

This sketch shows the requirements for stabilizing the outlets of pipes and culverts having a diameter of 36 inches or less. Do not use this stabilization measure for culverts installed on brooks and streams without first consulting with the Department of Environmental Protection and the Department of Inland Fisheries and Wildlife about fish passage needs.

INSTALLATION

Stabilize each culvert's outlet within 24 hours of installing the culvert.

1. Excavate to form a pool that will be four culvert diameters long by two culvert diameters wide by one culvert diameter deep after the stone lining is placed. For example, the finished plunge pool for an 18-inch culvert would be six feet long, three feet wide, and 18 inches deep. These are the finished dimensions of the pool. To account for the stone lining, your initial excavation would need to be about two feet longer, two feet wider, and one foot deeper.
2. Smooth the surface of the excavated pool and remove any protruding rocks and roots. The sides of the plunge pool sloping to the pool's center must be no steeper than 1V:2:H. A 1V:2H slope rises one foot for every two feet of level distance.
3. Line the pool with a non-woven geotextile or with six inches of clean, bank-run gravel free of clays, silts, and fine sands.
4. Machine place or hand place a 12-inch layer of six to twelve inch stones over the geotextile or gravel bedding. Do not dump the stone onto the geotextile or gravel bedding directly from a truck or loader. Use only hard, angular stones whose lengths are no more than four times their width. Do not use shale, sandstone, or other stones showing signs of splitting or spalling. Do not use rounded stones.
5. Finish the stone lining by hand, filling voids and gaps to provide an interlocking, uniform surface.

MAINTENANCE

- ◆ Inspect the plunge pool yearly or after severe storms for dislodged stones or slumping of the stone lining. Reposition stones to restore the pool's original dimensions and uniform surface. If the stone lining shows failure that exposes the underlying geotextile, gravel bedding, or native soil, then see a professional engineer for assistance in designing a new outlet structure.
- ◆ Clean yearly any accumulated sediments and debris from the plunge pool.
- ◆ Cut or remove yearly any woody vegetation growing within the pool.

See *Maine Erosion and Sediment Control BMPs* (3/2003) Section E-3 for more information on stabilizing culvert outlets.